Appendix C:

News Articles

current figures on phone service availability in Colombia were not provided by Northern Telecom, the digital upgrade project will increase phone service coverage throughout the country, said a spokesman for Northern Telecom-CALA, the vendor's sales and marketing arm for the Caribbean and Latin America.

The Colombian project is one of several Latin American deals Northern Telecom-CALA is cultivating. The company is part of a consortium going after a hotly contested contract to build a cellular infrastructure in Colombia, the spokesman said. The government will announce the recipients of the contract within weeks. If chosen, Northern Telecom would deploy its DMS-MTX time division multiple access SuperNode systems.

Northern Telecom-CALA also has equipment contracts in Brazil, Mexico, and several Caribbean locales.

AirTouch execs say PCS will play small role

Charles F. Mason , East Coast Bureau Chief

While maintaining their continued interest in competing for personal communication services (PCS) licenses, the top two executives at AirTouch say they don't believe PCS will reach a point of equality with cellular in the years to come.

"I don't believe PCS will ever catch up to—let alone surpass—cellular," said Lee Cox, president of AirTouch.

Continued delays by the Federal Communications Commission to license PCS is also good news, said Sam Ginn, AirTouch chairman.

"The delay is in our favor," he said. "[The longer] we can maintain the current wireless market structure, the better."

Both men spoke during a recent press briefing as the company was officially spun off from Pacific Telesis.

While AirTouch plans to bid for PCS licenses, Ginn said "if there is a bidding frenzy, we will not participate."

Cox said that cellular carriers' more than 10-year head start over PCS providers is virtually insurmountable. He estimated that it will take PCS carriers seven or eight years to deploy networks as ubiquitous as cellular and by that time cellular carriers will have improved their networks even further.

Ginn declined to discuss rumors that his company is planning an alliance of some sort with another cellular carrier, other than to say that "everybody is talking to everybody."

AirTouch has been rumored to have been involved in talks with Nynex and Bell Atlantic.

As part of its newly won freedom from the Modified Final Judgment, the company is planning to implement a new long-distance strategy by June. No longer subject to the equal access requirements or the service restrictions imposed by the MFJ, the company plans to transport its own completely wireless services, including interexchange calls, Cox said. For other long-distance calls, AirTouch will soon have an agreement with "one or more" interexchange carriers that will allow it to buy service wholesale and resell it to cellular subscribers at retail, he said.

While discounting the threat from PCS, both executives said they plan to meet any competitive challenges from Nextel or PCS providers. They said the outlook for wireless telecommunications, both domestically and globally, is unparalleled.

Eunetcom to use NET backbone equipment

Network Equipment Technologies Inc. will supply its wide-area network bandwidth managers and other equipment to Eunetcom, a joint venture of France Telecom and Deutsche Telekom that is building a data network for European multinational corporations.

NET's IDNX/90 Communications Resource Manager will be installed on an 18-node backbone network with two units at each node by the middle of the year. Eunetcom's backbone network will connect to eight sites in seven European countries, including Paris and Frankfurt, where Eunetcom is based. In addition, there eventually will be a trans-Atlantic connection to the United States, and the network will be further expanded over the next several years, according to Eunetcom.

Eunetcom plans to offer outsourcing services, managed bandwidth services and private network solutions to large multinational customers, including banking and financial institutions, retail organizations, government entities and other businesses. The joint venture company also will use NET's NetOpen network management system and will resell frame relay services using its IDNX FrameXpress option.

NET is based in Redwood City, Calif. It also operates an office in Paris, from which it will coordinate its relationship with Eunetcom.

MFS Intelenet serves up its own numbers

MFS Intelenet made history recently, becoming the first competitive access provider to activate blocks of telephone numbers directly assigned to its own switch. That means incoming calls to some MFS Intelenet customers no longer have to pass through New York Telephone switches.

The company activated two blocks of about 10,000 phone numbers each in New York City's 212 area code. The action will reduce the potential for technical problems, and improve service reliability and security, according to MFS Intelenet, which has been offering integrated local and long-distance service to small and medium-sized business customers since last October *(Telephony, Oct. 4, 1993, page 1)*.

The activation of the new number blocks, known as NXX codes, follows an order issued late last year by the New York Public Service Commission stating that NXX codes should be allocated to MFS Intelenet. Prior to this order, the MFS Communications subsidiary had to lease phone numbers from New York Tel. MFS Intelenet also has asked regulators in Illinois, Maryland and Pennsylvania to follow the lead of the New York PSC.

Being able to assign its own numbers will help MFS Intelenet emerge as an independent carrier, forcing New York Tel to treat it on the same basis as In-

continued on page 14

New York Times, August 30, 1994

MCI Cancels Investment In Nextel

By EDMUND L. ANDREWS

Special to The New York Times

WASHINGTON, Aug. 29 — MCI Communications canceled its plan today to invest $1.3 billion in Nextel Communications Inc., a wireless communications company that intends to create a nationwide network rivaling current cellular telephone systems.

The companies said they would still try to renegotiate the deal, which had been announced in February. But today's move casts doubt on Nextel's ambitious effort to use use a digital technology developed by Motorola Inc. to modernize a small band of radio frequencies that were originally reserved for linking private fleets of trucks and taxi cabs.

No Clear Strategy

And the decision to renegotiate by MCI, the nation's second-largest long-distance telephone carrier, leaves it without a clear strategy for competing in the booming market for wireless communications.

Nextel's stock plunged $5.25, to $25.25, in Nasdaq trading today, as did the shares of several other mobile-radio companies that had recently announced they would sell to Nextel in stock transactions. In Nasdaq trading, shares of Onecomm, which is based in Denver, fell $6, to $24.50, and shares of Dial Page, which is based in Greenville, S.C., dropped $4.25, to $25.50.

Shares of MCI, which is based here,

Continued on Page C2

MCI Cancels Investment Of $1.3 Billion in Nextel

Continued From First Business Page

fell 37.5 cents, to $24, in Nasdaq trading.

While neither Nextel nor MCI would elaborate on the factors that derailed the deal, people close to MCI said the company had grown increasingly concerned that Nextel's technology would not be sufficient, by itself, to fully compete against today's cellular telephone systems.

MCI executives are thought to be seeking a much lower price for its stake in Nextel and greater flexibility to use other wireless technologies alongside the Nextel system.

Both companies said they were still discussing a deal of some other sort, but said they could offer no assurance that they would reach an agreement. "The deal we announced in February will not occur," said Gerald H. Taylor, president of MCI.

Today's announcement comes just as MCI's archrival, the AT&T Corporation, appears close to consummating its $12.6 billion acquisition of the nation's biggest cellular company, McCaw Cellular Communications Inc. AT&T has cleared almost all the necessary regulatory hurdles and is planning to close the deal by Sept. 30.

MCI had been counting on Nextel, based in Rutherford, N.J., as the cornerstone of its effort to set up a nationwide wireless network that would offer high-quality telephone service, paging and data communications. Nextel's greatest assets are licenses for radio fleet-dispatch services in markets that represent a total of about 205 million people in the United States.

But the company has been running into technical problems in Los Angeles, where it introduced its first commercial service earlier this year. Industry analysts said today that the voice quality of Nextel's service was sometimes poor, making some callers sound as if they were talking underwater.

In addition, the telephones remain bulkier and more expensive than ordinary cellular telephones, which has forced Nextel to subsidize the price of equipment through its revenue from service. The pricing in Los Angeles is comparable to that of cellular service.

Equipment subsidies are standard procedure for many cellular companies, as well, but in Nextel's case the subsidy and the resulting financial burden are heavier.

Indeed, Nextel has not yet tried to market its telephones to the mass market of individual consumers. Rather, it has limited itself to the much narrower market of traditional fleet customers.

Nextel recently reported a loss in its fiscal first quarter of $33.6 million, on revenue of $21.5 million. That compared with a loss of $4.9 million, on revenue of $8.7 million, in the comparable quarter a year ago.

Under the original deal announced in February, MCI would have acquired 17 percent of Nextel for $1.3 billion, at prices of $36 to $38 a share. In the last several months, however, Nextel's stock has drifted steadily down from more than $45 a share in March, to about $30 last week.

A Range of Frequencies

In addition, Nextel had reached agreements to buy Onecomm and Dial Page in stock transactions that would have diluted MCI's stake to about 12 percent.

Kevin Inda, a spokesman for MCI, said the company had been closely involved in the two recent acquisitions and had not objected to them.

Mr. Taylor said he still hoped to reach a deal with Nextel. "There are great benefits to MCI, and they are still our primary wireless play," he said. But, he added, MCI is not wedded to Nextel's particular technology and would probably used a range of radio frequencies to develop a comprehensive wireless capability.

"Don't think of Nextel as a technology," he said. "Think of Nextel as a vehicle for providing wireless services."

Morgan E. O'Brien, chairman of Nextel, defended his company's system and said he was as confident as ever. "The technology is terrific, and it's getting better every day," he said.

But a number of industry analysts said the sound quality of Nextel's system had often been inferior to those of standard cellular systems. The complaint about people sounding as if they were underwater had also been lodged against the digital systems introduced by some cellular companies.

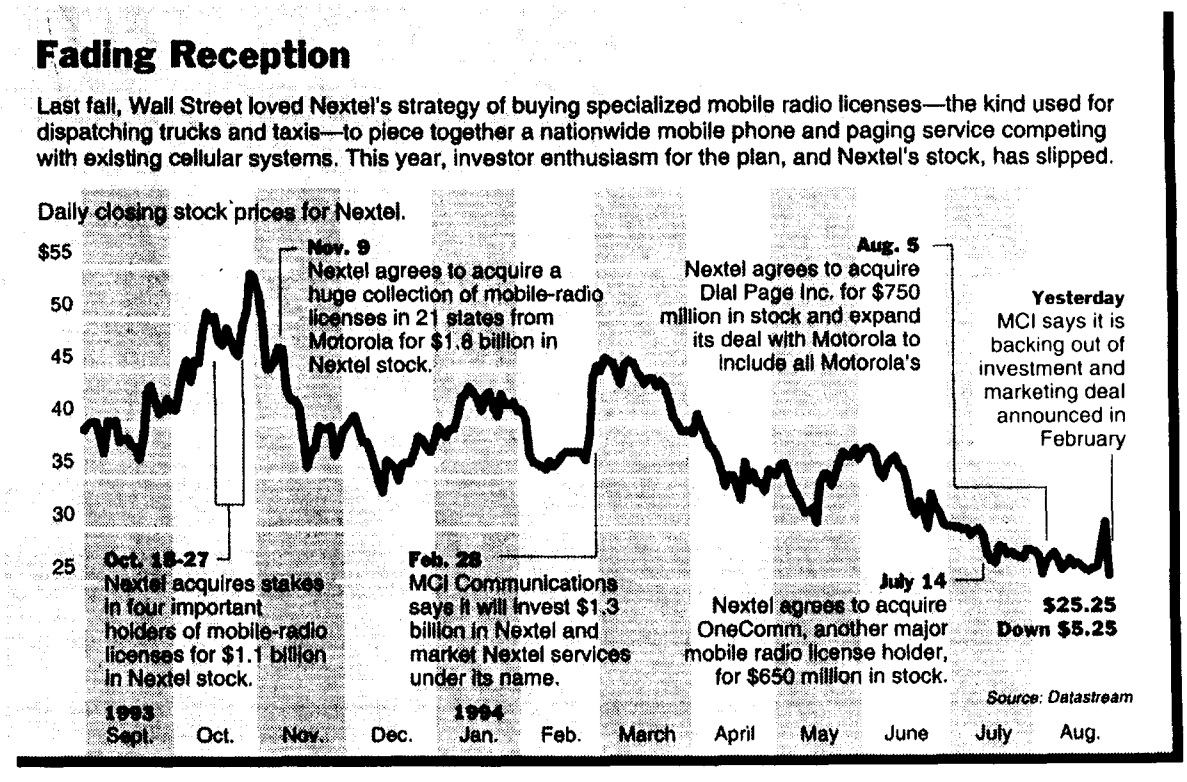
The quality is "good but it isn't great," said Timothy Weller, an analyst at Donaldson, Lufkin & Jenrette who follows MCI. But, he added, "it's working better than it was six months ago."

Dennis Leibowitz, who follows wireless communications for Donaldson, Lufkin & Jenrette, said MCI and Nextel still had a good chance of reaching a deal because MCI had few other ways to build a nationwide wireless network quickly.

"I'd say the odds are better than 50-50 that the deal will go through in some form, though undoubtedly at a lower price," he said.

MCI, Nextel and Nextel's current biggest investor, the Comcast Corporation, had hoped to reach a final agreement by June 30 and, failing that, by Aug. 30. The three companies met again last weekend, but were unable to reach an agreement.

Mr. Taylor said MCI felt obliged to issue today's statement because it could no longer be sure that a deal would emerge.



NEW YORK TIMES, FRIDAY, SEPTEMBER 2, 1994

MCI Severs Negotiations With Nextel

Motorola Disagreement Unravels Wireless Deal

By EDMUND L. ANDREWS

Special to The New York Times

WASHINGTON, Sept. 1 — The MCI Communications Corporation formally ended a proposed $1.3 billion deal with Nextel Communications Inc., the company on which it had based its plans for building a nationwide wireless telephone network.

Citing intractable disagreements with Motorola Inc., a major shareholder in Nextel that had veto power over a deal, MCI said today that it had definitively broken off all talks.

"Although discussions were proceeding along positive lines with Nextel, any new transaction would have required Motorola's consent," the company said in a terse statement. "MCI and Motorola were unable to reach agreement on terms."

No Wireless Strategy

By driving a stake through the deal, MCI, the nation's second-largest long-distance carrier, is now left without a wireless strategy at a time when companies like the AT&T Corporation and the regional telephone companies are racing to build big new cellular networks.

The deal raises questions about whether MCI blundered in signing up as a partner with Nextel, a start-up company that is trying to offer nationwide cellular-like telephone service using radio frequencies set aside for linking truck and taxi fleets. Nextel's technology, developed by Motorola, is still brand new and has been running into problems in delivering sound quality on a par with cellular telephones.

MCI executives declined to elaborate on the obstacles, saying merely that they were based on terms and price. Though MCI had planned in February to acquire a 17 percent stake in Nextel for $36 to $38 a share, Nextel's stock had dropped from $45 a share earlier this year to less than $30 last week. Making matters worse, MCI's stake would have been diluted to about 12 percent once Nextel issued new shares to complete several acquisitions of other radio dispatch companies.

But some analysts believe Nextel's system had fundamental limitations that were probably at the root of disagreements over the company's valuation. The problem is that Nextel's licenses, known as Specialized Mobile Radio, or SMR, licenses, cover less than half as many frequencies as those for cellular phones cover.

To preserve good sound quality, they argue, Nextel would have had to serve fewer customers. "This thing was not built to be a cellular system," said Jack Grubman, a telecommunications analyst with Salomon Brothers. "Something had to give somewhere."

Consent Denied

Gerald R. Taylor, president of MCI, said the technology problems would have been surmountable. "The economics of that band are economical in terms of providing service," he said. "Motorola really did have to consent to the agreement, and they just wouldn't."

Executives at Nextel and Motorola could not be reached for comment tonight. Under the terms of the original deal, however, Motorola would have had a bigger stake in Nextel than MCI simply by trading its own licenses for radio dispatch service around the country. MCI would have invested $1.3 billion, and contributed its well-known brand name and vaunted marketing prowess in long-distance communications.

Mr. Grubman noted that MCI had other wireless options. It can seek an alliance with the GTE Corporation or with a group of the regional Bell companies, which are the biggest operators of cellular phone service.

Two groups have already been formed, each of which has hopes of adding partners to form a nationwide network. Airtouch Communications, the cellular operations recently spun off from Pacific Telesis Group, has teamed up with U S West. And the Bell Atlantic Corporation and the Nynex Corporation are pooling their cellular operations into a single network running from Maine to North Carolina.

Cellular-Phone Rates Spark Static From Users

5-5-94

By Gautam Naik
Staff Reporter of The Wall Street Journal

Virgil Cobb was smitten by the idea of being a walking, talking, reach-me-anywhere executive. Like millions of others, he just loved his cellular phone.

"It was like a drug," says Mr. Cobb, the owner of a small building-materials firm in Detroit. But after paying bills of $400 a month for three years, Mr. Cobb canceled his phone service and now resorts to a pager and pay phones. His monthly beeper bill: $12. As for cellular service, he says, "It'll have to be pretty darn cheap before I use it again."

Unhappy cellular-phone owners are a growing breed. Lured by the tantalizing claims of the wireless revolution, they rushed out and bought nifty pocket phones, believing that instant access would be worth the price. Now many users are questioning whether charges of 60 cents a minute for local calls are ever worth it.

Some customers have sharply cut back on phone use. Others, like Mr. Cobb, have abandoned their cellular phones altogether. One recent survey shows about 60% of companies using cellular service say high rates are a big source of discontent. Even as the cellular business continues to post soaring growth, about 30% of customers in some markets cancel their service every year or switch to another carrier.

"We've reached a saturation point for those who are willing to pay high dollars for cellular service," says Kevin Allodi, a vice president at Computer Sciences Corp., which provides billing and other services to telecommunications firms. "Now cellular operators are bumping up against those consumers who want to see prices lowered."

The cellular industry has grown at explosive rates since its launch a decade ago. In 1993 alone, the number of customers surged 45% to 16 million, while revenue zoomed 40% to $10.9 billion. Despite this growth, it isn't a whole lot cheaper to make a cellular call today than it was 10 years ago. While long-distance charges have fallen roughly 40% in the past decade, by one measure even the *lowest* average cellular rates around the country have come down only 9% in eight years.

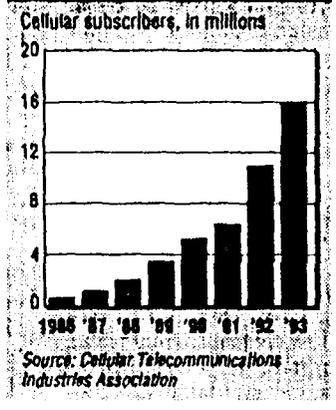
One major reason is a lack of competition. The Federal Communications Commission in 1981 decreed that each cellular market should be restricted to just two cellular carriers, and typically the entrenched local phone company is one of them. And unlike regular phone service, cellular doesn't have to answer to regulators.

The FCC holds out the hope of more competition. It has set plans to auction licenses for "personal communications services," which would introduce up to seven new rivals in each market. But the auctions aren't until the fall, and any new services are two years away.

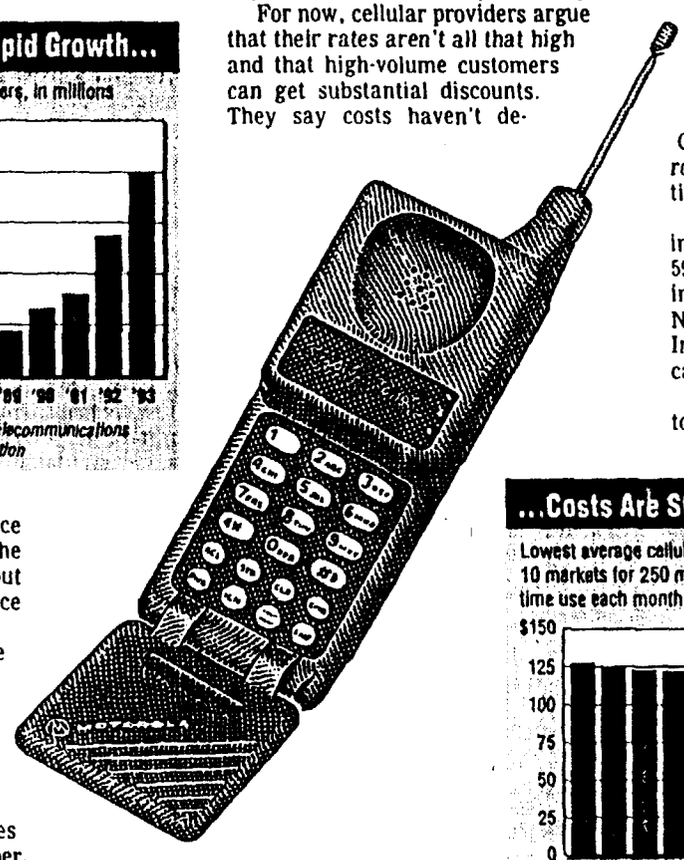
For now, cellular providers argue that their rates aren't all that high and that high-volume customers can get substantial discounts. They say costs haven't declined more because of the industry's huge outlays to build transmission towers, develop new digital technology and administer expanding operations.

"You'll see prices come down as you see economies of scale," says Ray Dolan, vice president of marketing at Nynex Mobile Communications, a unit of Nynex Corp. "Now, no matter how fast we throw resources at it, we can't keep up" with the infrastructure required to meet growing demand.

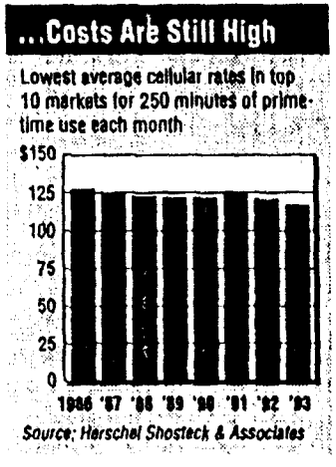
Despite Rapid Growth...



Source: Cellular Telecommunications Industries Association



...Costs Are Still High



Source: Herschel Shosteck & Associates

The numbers tell a different story. In the past decade, some $13.9 billion has been spent building the system, while $36.9 billion in revenue has been taken in. Last year five million new subscribers signed on, and building new "cell sites" to serve them ought to have cost $4.5 billion, based on industry data showing the average cost of a cell site. But the industry actually spent only $2.6 billion because so much infrastructure is already installed: Cellular is now available in more than 90% of the U.S.

Even carriers admit they will be forced to lower per-minute rates when competitors arrive. Some users ask: If they can lower prices then, why not now? Barry Goodstadt of Electronic Data Systems Corp. offers one answer: "Cellular firms clearly have room to lower prices. But they know they have competition coming. So you get your margins while you can."

Per-minute costs hardly vary among the two carriers in many major cities. In New York, Nynex charges up to 59 cents per minute during peak hours whether the call is incoming or outgoing; rival Cellular One of Paramus, N.J., controlled by McCaw Cellular Communications Inc., charges 65 cents. In Los Angeles, the two cellular carriers charge 45 cents and 41 cents a minute.

The lack of real competition has given cellular operators the freedom to impose stringent contract conditions including high "activation" fees just to get service started. Cellular One of Paramus typically charges $55 unless it uses a special promotion and waives that fee, and the user is obliged to stick with it for at least one year. Leave early, and you pay a $200 penalty. And the cost of cellular equipment is extra.

But customers are rankled most of all by "roaming" charges, the stiff fees users must pay to make calls from outside their home regions. During a recent call to New York from California, Jeffrey Hines, an analyst at PaineWebber Inc. wound up paying $21.89 for a 22-minute cellular call—in addition to his basic monthly charge of $40, which includes the first 30 minutes of local calls. Another irritant is the charge for incoming calls (a practice not followed by cellular companies in Europe). "It's a double whammy," Mr. Hines complains.

Such consumer dissatisfaction adds up. Consumers "fall in love with the phone, but they don't really under-

Please Turn to Page B7, Column 3 Continued

Wall Street Journal

Wall Street Journal
5/5/94

cellular, cont'd

Continued From Page B1

stand how the service works," says Tom Kelly, a vice president at Cellular One of Paramus. High customer turnover is due in part to the "additional charges, the unpredictability of roaming and billing problems," he says.

Critics of the carriers say current subscribers shouldn't have to fund the industry's high-tech fancies and future growth. In Michigan, state Sen. Don Koivisto is pressing to regulate per-minute rates and scrutinize billing practices. "Anyone using these phones realizes how convenient they are," he says. "The problem occurs when consumers open their bills."

Such a problem happened at Allied Equipment Corp., which makes materials-handling gear in Hayward, Calif., after the company decided to equip its 12-person sales force with cellular phones and pay half the charges. Over two years, the company rang up an astonishing $250,000 in cellular phone bills—more than $10,000 a year per person. Allied pulled the plug last year. Its two-year cost is down to $55,000 for all local, long-distance and pager service.

"We got to a point where we couldn't slow down on the cellular phones," recalls Eric Landtom, one of the salesmen. "I was definitely a more productive salesman. But the cost couldn't justify the means."

Appendix D:

Excerpts from
Memorandum Of The United States In Response To
The Bell Companies' Motions For Generic Wireless Waivers

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

UNITED STATES OF AMERICA,	)	
	)	
Plaintiff,	)	
	)	
v.	)	Civil Action No. 82-0192 HHG
	)	
WESTERN ELECTRIC COMPANY, INC. and AMERICAN TELEPHONE AND TELEGRAPH COMPANY,	)	
	)	
Defendants.	)	

MEMORANDUM OF THE UNITED STATES IN RESPONSE TO THE BELL COMPANIES' MOTIONS FOR GENERIC WIRELESS WAIVERS

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July 25, 1994

1. *Cellular Exchange Service Markets are Not Competitive Today.*

These cellular systems have substantial market power. The FCC has so concluded on four separate occasions in the last three years,[20] and the General Accounting Office has reached the same conclusion.[21] The Department's extensive investigations into the cellular industry likewise indicate that cellular duopolists have substantial market power: "the ability to raise prices or restrict output." *Triennial Review*, 900 F.2d at 296.

The basic structural problem with cellular markets is well known -- the fact that they are and have been duopolies with (at least until very recently) absolute barriers to entry. While the FCC's decision to issue two cellular licenses -- rather than only one -- was motivated by a desire to stimulate competition, *Cellular Communications*, 89 F.C.C.2d 58, 61 (1982), two-firm markets are not particularly competitive.[22] The noncompetitiveness of two-

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[20] *FCC Equal Access NPRM*, ¶ 36; Notice of Proposed Rulemaking and Tentative Decision, *In the Matter of Amendment of the Commission's Rules to Establish New Personal Communications Services*, 7 F.C.C. Rcd 5676, 5702 (1992) ("*PCS NPRM*"); Report and Order, *In the Matter of Bundling of Cellular Customer Premises Equipment and Cellular Service*, 7 F.C.C. Rcd 4028, 4029 (1992); *see also* Second Report and Order, *In the Matter of Amendment of the Commission's Rules to Establish New Personal Communications Services*, 8 F.C.C. Rcd. 7700, 7744 (1993) ("*FCC PCS Order*"). The FCC's recent decisions -- particularly its 1993 PCS Order -- were entered after and despite the cellular industry's intensive (but unpersuasive) efforts to argue that the cellular duopoly is competitive. *See* Reply Comments of the Department of Justice, *In re Personal Communications Services*, at 17-22 (F.C.C. Jan. 19, 1993) (citing and rebutting arguments).

[21] Report to Hon. Harry Reid, U.S. Senate, *Concerns About Competition in the Cellular Telephone Service Industry*, pp. 2-4 (Gen. Acctg. Ofc. 1992).

[22] Economic theory generally predicts that prices will be higher and output less in markets with fewer rather than more competitors, or in markets that are more highly concentrated, absent mitigating factors. *See, e.g.*, Scherer & Ross at 277-78; 4 Areeda & Turner, ¶ 910b at 55 ("there is general agreement that beyond some point the smaller the number of firms and the larger the share of the market dominated by one or a relatively few firms, the greater the likelihood of substantial departures from competitive performance, particularly with regard to price"); Stigler, "A Theory of Oligopoly, 72 *J. Political Econ.* 44-61 (1964). Studies indicate that markets dominated by duopolies are particularly troublesome. "Large market shares for the two leading firms seem most decisive for industry price-cost margins, with a depressing effect from a *sufficiently large* third share." Kwoka, "The Effect of

firm markets is exacerbated here by the overlapping alliances of the cellular carriers, so that firms that "compete" with each other in one market are partners in another.[23]

The BOCs' internal documents, written at the same time that they were telling the Department that cellular is "robustly competitive," demonstrate that *in the BOCs' view* cellular is comfortably noncompetitive. Southwestern, which argues that "wireless markets today are vigorously competitive" (SWB Mem. 11), observed in 1991 -- the year it and the other BOCs filed for this waiver -- that there was an "absence of significant price competition" in cellular, and that the market is "highly attractive" for that reason. [218486] Southwestern further observed:

> The FCC predicted sufficient levels of rivalry from a duopoly. In actuality, the two players in each market have been able to avoid serious competition in this rapid growth environment. [218492]
>
> In the current environment, characterized by rapid growth and limited rivalry, relative position is less relevant than in mature, competitive industries. . . . In the future, as new competitors enter the market and subscriber growth eventually levels off, positioning will become increasingly important. [218517]

More recently, Southwestern observed that "new industry entrants will not be *effective* competition before 1996" (emphasis in original). Southwestern assessed that threat of new entrants as "medium," and the bargaining power of buyers as "low" -- recognizing that the

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Market Share Distribution on Industry Performance," 61 *Rev. Econ. & Statistics* 101, 108 (1979). Many studies have found a statistically significant positive correlation between price and market concentration. *See* Schmalensee ,"Inter-Industry Studies of Structure and Performance," *in* 2 R. Schmalensee & R. Willig, *Handbook of Indus. Org.* 987-88 (1989) (collecting studies); L. Weiss, *Concentration and Price* 268 (1989) ("overwhelming support" for concentration-price hypothesis).

[23] For example, AirTouch (the former PacTel cellular properties) is a partner with McCaw in operating a cellular system in San Francisco, and competes against a McCaw/BellSouth system in Los Angeles. BellSouth, McCaw's partner in Los Angeles, is McCaw's rival in Miami. Southwestern Bell partners with McCaw in operating the "Cellular One" marketing organization, but competes against McCaw in Dallas, St. Louis and Kansas City.

"threat of substitute products or services [is] low" and that "extensive time periods for regulatory determinations, license awards and infrastructure construction will occur prior to the emergence of effective competitors." [SWB 203264-65]

Other BOCs have made similar observations about cellular markets:

> The duopoly structure is a continuation of the status quo. . . . Under this scenario, competitive intensity is greatly reduced. This enables direct cellular competitors to improve margins . . . . In fact, the most significant element of this structure is the probability that profit margins for all competitors would tend to increase under prolonged restricted competition. (AM00385-86, Ameritech, July 1990)

> Cellular industry--unusually attractive structural characteristics--government-mandated duopoly providing very high barriers to entry--essentially unregulated with regard to rates and rate of return . . . overall competitive rivalry is low to moderate . . . to date little competition on service pricing. (PT00008-12, PacTel, Sept. 1, 1987)

> The burgeoning demand for cellular service when coupled with the duopolistic market structure mandated by the FCC has led most investment analysts to conclude that the cellular industry will be even more profitable than cable TV, to which comparisons are constantly made. . . . While BAMS believes that providing quality cellular service requires considerably more investment in the infrastructure of the business . . . than does cable, it must be acknowledged that the investment community has been generally correct in forecasts of thriving cellular revenues. It is also important to note that increased market penetration in the absence of downward price pressures will buy alot of infrastructure. (106707, Bell Atlantic 1989)

In June 1992, six months *after* filing this waiver application asserting that cellular was "robustly competitive," US West observed: "Current duopoly structure and market growth limits competitive intensity." [USW 875]

Cellular carriers often have the ability to *raise* prices for cellular service, particularly by raising prices in a manner that is less visible to the customer. A review by Southwestern Bell of its cellular markets demonstrates the phenomenon:

> Chicago has made a number of changes to improve subscriber revenue. These include: November 1987--changed prime hours from 8 am to 8 pm to 7 am to 9 pm; March 1990 began charging for 'ring time'; . . . December 1990 increased foreign

roamer rates from 50¢/min to $2/day and 75¢/min; May 1991 increased basic monthly access charge to $19.95. This impacts about 40% of the base. For the future, with rates in general being so low, it is our intent to continue to increase rates. . . . We are also evaluating charging customers for the Telco interconnection fees associated with their usage. [203139]

Over the past few years, Boston has initiated several key rate changes to improve subscriber revenue per customer. The changes include the following: July 1989 roamer surcharge introduced; April 1990 changed the billing increment from the 6-second rounding to full minute; July 1990 introduced a free of peak plan with a premium monthly access charge; June 1991 increased foreign roamer rates 32%; June 1991 raised monthly access charge $2. . . . [A]t this writing, while we are implementing a rate increase in June 1991, Nynex has filed a tariff which would lower rates and price their plans below ours across the board. Their actions seem illogical and appear to contradict the steps needed to offset declining customer usage. . . . As for the future, SBMS believes there are other opportunities to increase rates in Boston, somewhat dependent on our competitor. . . . With monthly access charges relatively low, SBMS will continue efforts to move this fixed charge upward. [203140-41]

The Washington/Baltimore property historically has had the highest subscriber revenue per customer of all the SBMS properties. . . . Washington/Baltimore was one of the last SBMS properties to fall below the $100/month average subscriber revenue. . . . Plan F, a plan designed to add new customers quickly . . . resulted in a large addition of customers, [but] it was priced so inexpensively . . . that it drove the Washington/Baltimore average downward. Plan F has been subsequently dropped. Despite the obvious failure of Plan F, Washington/Baltimore has introduced a number of changes to improve subscriber revenue per customer . . . : Changed the billing increment to full minute rounding; increased roaming rates; . . . changed peak hours . . . ; increased access charges on low end plans. Washington/Baltimore's future changes will focus on gradually increasing rates. This will be accomplished mostly through higher access charges and possibly increased per minute rates." [203141-42]

Dallas subscriber revenue per customer has always been good for a large market. . . . Over the last couple of years, the Dallas property has been the SBMS leader in implementing changes to improve subscriber revenue. Subscriber revenue per customer has declined 13.8% since 1988 while peak minute usage per customer has dropped 24%. Major factors contributing to this performance are as follows: Changed from 30 second to full minute billing increments; raised access charges on economy and basic plans; introduced 'free off-peak' which initially resulted in higher peak usage. Once established, eliminated the offering from low-end plans; increased foreign roamer rates . . . . Dallas has also increased activation fees, voice mail rates, and other miscellaneous charges. . . . Dallas is also reviewing charging customers the interconnection fees charged by the Telco associated with customer usage. In Dallas, this could be as much as 2¢/min, which would be a significant boost to subscriber

revenue. [203143-44]

> [In l]ate 1989 [in Oklahoma City,] . . . roaming rates were increased. In early 1990 billing increments were changed to full minute rounding. [203146]
>
> Similar to the other SBMS markets, the West Texas properties have been gradually increasing rates by changing the billing increment, raising access charges and increasing roamer rates. Additional increases in rates will be gradual as in the past so as not to create a competitive disadvantage. Further upward movement of the access charges is the most likely course with the de-emphasis of the economy plans close behind. [203146-47]

Examination of pricing data shows a similar ability to raise prices.[24] A look at BellSouth's pricing practices in Florida, a state in which BellSouth claims to be at a competitive disadvantage against its A block competitor, McCaw,[25] is most revealing. Over the 1990-1993 time period in Miami, the state's largest market, BellSouth's average per minute revenues for cellular service rose 21 percent, while its market share of service revenues rose from 48 percent in 1990 to 50 percent in 1993, despite McCaw's larger share of minutes of use. For the years 1991-1993, BellSouth's per minute revenues were two percent, nine percent, and 15 percent higher than McCaw's, respectively (in 1990, BellSouth was one percent lower). In Jacksonville, over the same 1990-1993 period, BellSouth's per minute revenues rose more than 30 percent, while McCaw's per minute revenues varied from

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[24] The simplest way to examine cellular service prices is to divide service revenues by minutes of use. This calculation permits an observation undistorted by pricing plans and the like, and often is used by the cellular carriers themselves to measure their performance. The pricing information in this memorandum is based on comparing service revenue and minutes of use, based on data provided to the Department by the BOCs and McCaw in connection with our investigations, and is submitted as Exh. 7.

[25] *See, e.g.*, BellSouth Corporation's Opposition To AT&T's Motion for a Waiver of Section I(D) of the Decree Insofar as it Bars the Proposed AT&T-McCaw Merger, pp. 18-22 (June 28, 1994) (claiming that BellSouth is at a competitive disadvantage due to McCaw's "City of Florida" plan that allows its subscribers to have service throughout McCaw's service areas within the entire state at a single "local" price).

monopolist or oligopolist can vertically integrate and increase its monopoly profits.[33] And it is directly contrary to the observable facts here: Southwestern has raised prices of "ancillary" services, such as roaming, rather than raise more visible prices (*see* SWB 203136-37), and the BOCs all observe that *non*-equal access carriers, such as McCaw, charge top dollar for long distance services that are "ancillary" to their cellular service, rather than simply raising the price of cellular service.

D. *The Movants Have Not Demonstrated any Significant Changed Circumstances Warranting Relief.*

Under *Rufo*, the party seeking modification "bears the burden of establishing that a significant change in circumstances warrants revision of the decree." 112 S.Ct. at 760. As this Court noted, a significant change is a "significant change in factual conditions or in law" that could not have been anticipated at the time the Decree was entered. *AT&T/McCaw Decision*, 154 F.R.D. at 7-8, *quoting Rufo*, 112 S. Ct. at 760.

Since the Court rejected the BOC's application to provide interexchange service from cellular exchanges without equal access in 1987, *Triennial Review*, 673 F.Supp. at 551, the BOCs must show that a significant change since then would warrant their instant motion to provide such service. The changed circumstance necessary, and which has not occurred, would be a substantial increase in competition in wireless services, so that cellular carriers would not have significant market power. *See Decree Opinion*, 552 F. Supp. at 195. They have not established that there has been such a change.

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[33] Carlton & Perloff 510; R. Warren-Bolton, *Vertical Control of Markets* 64, 80 (1978); J. Tirole, *Theory of Industrial Organization* 179-80 (1988); Scherer & Ross at 521-22.

The movants point to two developments to support their argument that there has been a significant change in circumstances. First, they argue that AT&T's acquisition of McCaw, if permitted by this Court and the FCC, will substantially change the cellular business by permitting entry of the nation's largest long distance carrier into the local cellular exchange business. This entry, they argue will place the BOC cellular systems at a substantial competitive disadvantage, thereby harming consumers. Second, they argue that entry into the wireless business is imminent in the form of SMR and PCS. They suggest that entry of these new providers will eliminate the need for equal access to preserve competition in the provision of long distance services to cellular subscribers. Neither of these developments justify the relief the BOCs seek.

The proposed final judgment that the Department has negotiated with AT&T refutes the BOCs' argument that AT&T will have different equal access rules. Rather, that proposed decree and the order proposed for the BOCs' motion applies consistent rules to both the BOCs and AT&T. The terms of the AT&T/McCaw judgment, if approved, would expand the scope of equal access to apply to McCaw cellular exchanges that do not currently provide equal access. As a result, that judgment will eliminate the competitive disadvantage that the BOCs claim they currently face. Ironically, granting the BOCs' motion would create the harm they claim they want to end -- placing a cellular provider in a position where it must provide equal access while competing with a provider that need not do so.

The BOCs' other contention is likewise without merit. As yet, there are no SMR or PCS providers of wireless telephony generally available today. It is, of course, possible that at some point these new technologies will offer wireless service in competition with today's

cellular duopolists. When it will happen and what effect, if any, it will have on competition in the market for cellular telephone service is now unknown.

The FCC has not yet assigned PCS licenses. Indeed, the Commission has not yet even said when licenses will be awarded. Once the licenses are assigned, the licensees must take a number of time-consuming steps before they can offer service. They must develop the necessary technology, obtain financing and build networks. The very nature of PCS, including the services to be provided and the technology to be employed, is not yet settled.[34] BellSouth itself told the FCC that "cellular systems and new PCS licensees will be competitors only to a very limited degree."[35] It is, of course, impossible to say how long it will take to develop PCS, but it appears that it will be some time before PCS service will have any impact on competition for wireless telephony. Any assertion that PCS has changed the competitive environment is premature at best.

Several firms are in the process of accumulating radio spectrum currently allocated to Special Mobile Radio (SMR) with the stated intention of offering wireless telephone service. While that service might be closer to deployment than PCS, when and if it will be available is not yet known. SMR providers currently offer a dispatch service that is functionally

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[34] *See* Peterson, "Positioning PCS on the Telecom Landscape," *Telephony*, 26 (December 13, 1993). Mr. Peterson is Manager of Market Research at Motorola's General System Sector, a prospective PCS manufacturer, and is positioned to be well informed on PCS.

[35] PCS Comments of BellSouth, *In the matter of Amendment of the Commission's Rules to Establish New Personal Communications Services* 48 n.96 (F.C.C. Nov. 9, 1992). BellSouth relied on a forecast by Telocator that "shows cellular service prices in 2002 remaining 14-67% higher than the price for 'personal telecommunications service' and as much as three times as expensive as telepoint service." *Id.*

distinct from cellular telephone service.[36]

Three firms are attempting to convert SMR spectrum to wireless telephone use. Nextel Communications Inc. is the only firm that has begun construction of an SMR system that would provide cellular-like telephony service. Nextel has noted that it could still face a number of difficulties, including having substantially less radio spectrum than that allocated to cellular telephone providers (which could cause its costs to be substantially higher), a limited number of equipment suppliers and a current inability to offer nationwide service. Nextel's filing also indicates that its service might not have adequate voice quality.[37]

This voice quality problem has also been noted by McCaw's Chief Operating Officer, who testified that Nextel's voice quality is currently poor. Mr. Barksdale noted that Nextel might have to halve its capacity to improve its voice quality, further increasing its costs.[38] As with PCS, the BOCs' assertion that SMR deployment constitutes a significant change in circumstances is, at best, premature.

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[36] Dispatch service is used by fleet dispatchers, such as those that issue assignments to taxicabs and utility repair trucks. Some SMR providers offer interconnection with the public switched telephone network; such service, however, is far less convenient that cellular service and is used infrequently. SMR customers who need mobile telephone service usually have SMR and cellular telephone equipment in their vehicles.

[37] Nextel Communications, Inc., Securities and Exchange Commission, Form S-3, pp. 28, 36 (February 8, 1994).

[38] Deposition of James Barksdale, June 28, 1994, 218-221 (Exh. I hereto). Mr. Barksdale's deposition was taken during the Department's investigation of the AT&T/McCaw transaction. Presumably, Mr. Barksdale had an incentive to emphasize the likelihood of Nextel's success as an entrant into the mobile telephone business.

Appendix E:

Articles from the American Economic Review

The American Economic Review

ARTICLES

JUNE 1984

The Misuse of Accounting Rates of Return: Comment

By WILLIAM F. LONG AND DAVID J. RAVENSCRAFT*

In a recent article in this *Review* (1983), Franklin Fisher and John McGowan (henceforth F-M) claim to have shown that "...there is no way in which one can look at accounting rates of return and infer anything about relative economic profitability or, a fortiori, about the presence or absence of monopoly profits" (p. 90). They then attempt to link this extremely negative conclusion exclusively to profit-concentration studies, despite more obvious and appropriate areas of application.

Aside from the questionable focus, the authors have little basis for reaching their conclusion, especially in regards to the profit-concentration issue. First, F-M do not always perform the calculations correctly. Second, they base their entire analysis on a measure of the profit rate which is not the one preferred in profit-concentration studies. Third, their examples tend to represent extreme cases; they do not reflect the typical U.S. industrial experience. Fourth, they do not demonstrate that the use of accounting rates of return leads to a positive bias in the profit-concentration relationship. And finally, they ignore substantial evidence that accounting profits do, on average, yield important insights into economic performance.

I. Analytical Errors

Fisher and McGowan's end-of-year asset accounting rates of return are incorrectly calculated. In comparing asymptotic accounting rates of return using beginning-of-year assets with those using end-of-year assets (Tables 2, 3, 5), they show the former rates as being greater than or equal to the latter, which is inconsistent with the results in their Table 1. If there is depreciation, and if the same accounting profit value is divided by the two asset values, the end-of-year accounting rate of return must be larger than the beginning-of-year accounting rate of return. Our Table 1 reproduces Panel B of F-M's Table 2, but with the correct definition of end-of-year assets.[1] There is a significant difference between the correct numbers and those reported by F-M. Therefore, their end-of-year asset results, except for their Table 1, should be discarded.

A much more serious problem is that F-M's analysis of end-of-year assets, even when correctly calculated, is still incomplete and misleading. They show in their Appendix that for continuous time, equality of the growth rate and economic rate of return assures equality of the accounting and economic rate of return. For the discrete analysis in the text, however, they show that the relationship holds for only accounting rates of return which use beginning-of-year assets as the denominator. They explicitly note that the relationship does not hold if end-of-year assets are used. The implication is that the standard practice of measuring assets as of the end of the period is incorrect. Their conclusion rests on a faulty transition from continuous analysis to discrete analysis, and on inconsistent definitions of economic rate of return, accounting rate of return, and growth rate.

The continuous time results derived in F-M's Appendix hold in discrete time for accounting profit rates defined with beginning-of-year assets as the denominator, if the growth rate and internal rate of return are defined in beginning-of-year terms. However, it also holds for accounting profit rates defined with end-of-year assets as the denominator, provided the growth rate and

*Bureau of Economics, Federal Trade Commission, Washington, D.C. 20580. The views expressed here are our own and not necessarily those of the Federal Trade Commission or any of its members. A review has been conducted to ensure that the data in this paper do not identify individual company line of business data.

[1]Only straight-line and sum-of-years' digits depreciation method results are given. F-M did not give sufficient information to permit us to distinguish among the many types of declining balance depreciation schedules.

TABLE 1—ASYMPTOTIC ACCOUNTING RATES OF RETURN (%) ON THREE VERSIONS OF THE Q-PROFILE: END-OF-YEAR ASSETS CORRECTION

	Six-Year Life (No Delay)		Seven-Year Life (One-Year Delay)		Eight-Year Life (Two-Year Delay)	
Growth Rate	Straight Line	Sum-of-Years' Digits	Straight Line	Sum-of-Years' Digits	Straight Line	Sum-of-Years' Digits
0	21.3	29.0	24.1	32.9	27.0	37.0
5	20.9	26.9	22.4	28.8	23.9	30.7
10	20.6	25.0	20.8	25.1	21.1	25.4
15	20.2	23.3	19.2	21.8	18.6	20.8
20	19.8	21.7	17.8	19.0	16.3	16.9
25	19.3	20.4	16.5	16.4	14.2	13.5
30	18.9	19.1	15.2	14.1	12.4	10.6

internal rate of return are defined in end-of-year terms. In fact, it holds for any convex combination of beginning- and end-of-year assets, subject to the requirement that the profit rate, growth rate and internal rate of return are all consistently defined.[2] Using variables defined relative to end-of-year instead of beginning-of-year, F-M's Table 2 could be recalculated to show the accounting rate of return for *end-of-year* assets equaling 15 percent for all cash flow profiles and all depreciation schedules, when the end-of-year growth rate is 15 percent. Thus, there is no a priori reason for preferring beginning- or end-of-year assets.

Fisher and McGowan's third problem is that they use 15 percent as the value of the economic rate of return, claiming that this was the average accounting rate of return for manufacturing in 1978. That is the value for the return to equity; the accounting rate of return to total assets was 7.8 percent in 1978 (FTC *Quarterly Financial Report... First Quarter, 1979*). If an economic rate of return of 7.8 percent is used instead of 15 percent, and the set of growth rates is centered on 7.8 percent, the maximum deviation from the economic rate of return for the accounting rate of return on beginning-of-year assets is 3.9 vs. 10.9 percentage points in F-M's Table 2 or 50 vs. 73 percent of the economic rate of return. The choice of a rate of return is important if we are trying to characterize the accuracy of accounting rate of return in the real world.

II. Alternative Profitability Measures

An analysis of the appropriate measure of profitability warrants a more extensive treatment than can be given in this brief note. However, F-M's claim that "... the economic rate of return is the only correct measure of the profit rate for purposes of economic analysis" (p. 82) requires some comment. The correct definition of profit depends on the context in which it is employed. If the analysis involves a study of investment behavior, then clearly the marginal economic rate of return is the correct profit measure.[3] It is not the preferred measure when studying monopoly power. Existing evidence suggests that the Lerner index, which can be approximated by profit/sales,[4] better reflects the degree of monopoly power.

[2] Let f_u be cash flow for an investment in the uth year of the investment's life, X_t be an arbitrary asymptotic variable in period t, r be the economic rate of return, and g be the growth rate. For beginning-of-year analysis, the definitions of r and g are given by $\Sigma_1^T(1+r)^{-u}f_u = 1$ and $g = (X_{u+1} - X_u)/X_u$. For end-of-year analysis, the definitions of r and g are given by $\Sigma_1^T(1-r)^{u-1}f_u = 1$ and $g = (X_{u+1} - X_u)/X_{u+1}$. The proof for the general case, of which beginning-of-year and end-of-year are special cases, is presented in our working paper (1983).

[3] Even in this context, several authors have concluded that measurement problems are not serious enough to make empirical work worthless (George Stigler, 1963; Martin Feldstein and Lawrence Summers, 1977). Others have developed procedures for correcting some of the measurement errors (Allan Young, 1975).

[4] The approximation is exact if average cost is constant. If it is not, the profit/sales ratio is a simple function of (price − marginal cost)/price and the elastic-

The basic reference on this issue is Joe Bain (1951). In describing his conceptual framework, he noted: "Average excess *profit rates on sales* should thus be higher with than without monopoly or effective oligopolistic collusion. ... we arrive at the hypothesis that there will be a systematic difference in average excess *profit rates on sales* between highly concentrated oligopolies and other industries" (p. 295–96, emphasis added). In his empirical work, Bain used the ratio of accounting profits to equity, though he reported that he had also conducted his statistical tests with the ratios of excess profits to sales and accounting profits plus interest to total assets, with the same general results.

Recent contributions have expanded on this conceptual framework, including Keith Cowling and Michael Waterson (1976), Frank Gollop and Mark Roberts (1979), and Long (1982). These studies have demonstrated that profit (net of all costs) divided by sales is a performance measure which may be derived from an optimization exercise in long-run equilibrium oligopoly models that include a conjectural variable.[5] They derive estimable equations which relate this profit measure to market share, concentration, elasticity, the magnitude of the conjectural variable, and other aspects of firms and industries. These models need to incorporate an investment function and dynamic considerations (particularly entry and exit) before the issue can be fully resolved.[6] However, given that no explicit model of oligopoly derives profit rates to assets as the performance measure, the profit/sales ratio appears to be a more defensible index.

There are few explicit discussions of the appropriate profit rate in the profit-concentration literature; the best we know is Leonard Weiss (1974, p. 198–99). The issue certainly is not settled in the literature, since many studies use either equity or total assets as the denominator of the profit rate variable. Most of those cite George Stigler (1963) as the source for the preference of profit/assets over profit/sales. Their reliance on Stigler may be misplaced. He focused primarily on interactions between investment and the rate of return on assets. He defended profits divided by total assets instead of stockholders equity, but he did not directly address the use of capital instead of sales in the denominator when he considered the profit-concentration relationship.

There is an additional serious drawback with the use of a profit/assets ratio as a measure of monopoly power. If the profit/assets ratio is meant to approximate the equilibrium marginal economic rate of return on investment, then it tells us nothing about the degree of monopoly power; in equilibrium every firm, whether competitive or monopolistic, will have invested until the rate of return on the marginal investment, adjusted for risk and net of the competitive cost of capital, equals zero. If, alternatively, it is meant to approximate the *average* economic rate of return, other problems arise. The average economic rate of return *on capital* may be equal to zero in competitive industries and greater than zero in noncompetitive industries, but beyond that the magnitude of the average return on capital does not tell us anything about the *degree* of monopoly power. For example, two monopolistic industries with the same demand and constant long-run average cost curves will have the same profit/sales ratio, but their profit/assets ratio will differ to the extent

ity of the average cost curve. Thus, the profit/sales equation needs to be expanded to include determinants of the cost elasticity. For an explicit development of this approach, see Long (1982).

[5]Note profits should be net of all costs, including capital cost. A common argument for using the profit/assets ratio is that most studies have not netted out capital cost. However, if profit/sales is the theoretically correct measure, then this amounts to arguing that two wrongs make a right. The preferred method is to estimate capital cost, subtracting these estimates from profits.

[6]A model of the entry/exit process is often implicitly used in supporting the use of profit/assets ratios. However, if capital markets are competitive, the residual of revenues over all costs (including the normal return to capital) accrue to the entrepreneurship function, not to capital. It still makes sense to envision firms moving into areas where the returns are highest, but it makes no sense, from this perspective, to divide the profit residual by some measure of capital. We are indebted to David Qualls for this observation.

that their capital intensities differ. Thus, higher profit/assets ratios, even when measured correctly, do not necessarily imply greater monopoly power.

We, therefore, question the relevance of F-M's work for the profit-concentration literature, since they do not address those studies which use profit/sales as the index of performance. Furthermore, F-M ignore the difference between the marginal and average return to capital by assuming all investments have the same cash flow, an assumption that even they admit is unrealistic.

III. The Validity of F-M's Examples

Even though F-M's analysis is inaccurate and incorrectly applied, it may still be useful to examine what sort of inferences can be drawn from their theorems and examples. The theorems show that accounting profits will not equal economic profits except in special circumstances. However, for most uses, it is sufficient if accounting profits are a reasonable proxy for economic profits. The examples employed by F-M illustrate that in some cases the differences between accounting and economic profit can be fairly large. Other examples can just as easily be devised for which the differences are immaterial. The relevant questions are, which examples are more representative of the population as a whole, and whether the measurement errors introduce systematic bias in statistical studies?

Work by Thomas Stauffer (1971) sheds some light on these issues. He estimated economic profit for nine industries in which large differences between accounting and economic profits were likely. These were industries with a substantial amount of long-lived assets, *R&D* expenditures, advertising expenditures, or other special features such as capitalized sales. Despite this special selection, the correlation between accounting and economic rates of return was .79. If one could extend this work to all industries, the correlation would presumably be significantly higher. There are, of course, some industries, such as pharmaceuticals, where the difference between accounting and economic profits are large, more in line with F-M's examples. But, as Stauffer emphasizes:

> ...[T]here is little reason to expect that significant corrections would emerge for most firms, since the great majority of U.S. manufacturing industries seem to have relatively rapid inventory turnover, short gestation periods in plant construction, a comparatively low level of *R&D* or product development expenditure, and reasonably high ratios of working capital to fixed assets.... Thus, extensive corrections to indicated rates of return should be the exception, rather than the rule. [p. V–10]

F-M's examples, therefore, do not appear to represent the typical industry.

Fisher and McGowan's use of an accelerated depreciation schedule in their examples creates exaggerated accounting-economic rate of return differences. In all of their examples except Table 2, they employ a sum-of-years' digits depreciation schedule. Using the 1975 line of business survey of 472 large manufacturing companies, we calculated that approximately 80 percent of assets were depreciated with the straight-line procedure. Only about 9 percent use sum-of-years' digits. The use of straight-line depreciation in all of the examples would therefore be more appropriate if F-M wish to claim their examples are representative.[7] The depreciation method selected is important, as can be seen in F-M's Table 2. The extent to which the accounting rate differs from the economic rate is substantially smaller for the straight-line method than the accelerated depreciation schedules.

The fundamental problem is that F-M try to reach general conclusions about statistical relationships through examples. Such an attempt is fundamentally flawed, since the examples may only reflect extremes. The inaccuracy of this approach can be illustrated from other aspects of the profit measurement problem. Line of business (*LB*)

[7]In its measurement of national income and related macroeconomic variables, the Bureau of Economic Analysis of the Department of Commerce converts all depreciation to the straight-line method. For a justification, see Young (pp. 15, 35).

profits may be distorted because of common cost allocations or nonmarket transfer prices. George Benston (1979) and William Breit and Kenneth Elzinga (1981) illustrate through examples that in some cases these distortions can be quite large. They, therefore, conclude that the *LB* data are misleading. Although the *LB* data set does contain some profits which are significantly affected by these problems, work by Ravenscraft (1981) and Long et al. (1983, pp. 45–63) shows that large distortions are atypical. The correlation between *LB* profits as reported by the companies and *LB* profits based on a market-allocation procedure is approximately .89. Similarly, reported *LB* profits, for which 50 percent of the transfers are valued at nonmarket prices, and *LB* profits, where all transfers are valued at market prices, also have a correlation of approximately .89.

IV. The Usefulness of Accounting Profit Data in Structure-Performance Analysis

The required accuracy of accounting profits is dependent on the context in which they are used. If a single accounting number is employed as evidence in an antitrust case, then certainly the accuracy of that number and not the typical accounting number needs to be ascertained. It is in this context that the F-M paper originated. However, they claim their analysis is relevant more generally to the profit-concentration literature without providing a justification for this extension. In particular, F-M never demonstrate (or even claim) that the use of accounting rates of return tends to overestimate economic rates of return in concentrated industries relative to unconcentrated ones, which they must do to show that the accounting-economic-profit divergence leads to a positive bias in the concentration-accounting profits relationship. If this divergence represents only random noise, then the statistical relationship between profits and concentration must be stronger than previous work indicates, because it prevails over significantly more noise than previously assumed.

Using the FTC's *LB* data for 1975, we have developed some indirect evidence that the accounting-economic-profit divergence does not significantly effect the qualitative conclusions of structure-profits regressions, even though it may introduce distortions for some individual profit numbers. As a first step, we calculated ordinary least squares (*OLS*) regression statistics for a leading equation in Ravenscraft (1983, p. 26), using profits/sales and profits/end-of-year assets as dependent variables, and using the same independent variables as he used.[8] The profit/sales regression and the profit/assets regression yield similar structure-performance inferences, with respect to most of the key variables, a result which is consistent with the findings of Bain and other researchers. In addition, the strongest statistical results arose in the profit/sales regression, which lends support to the choice of profits/sales over profits/assets as the dependent variable in such regressions.

The corrected F-M examples point to the potential for a large difference between profits as a ratio to beginning-of-year and end-of-year assets, when there is a substantial accounting-economic profit divergence. Therefore, structure-profit regressions using profits/beginning-of-year assets and profits/end-of-year assets should yield different statistical inferences, if the accounting-economic profit divergence results in a significant bias. Implicit in their analysis is the expectation that midyear assets should give intermediate results. To test these hypotheses, we recalculated the profits/assets equation, but with midyear assets and beginning-of-year assets as the denominator. Qualitative conclusions about individual independent variables for the three equations are almost identical. Therefore, there is little indication of a significant bias. The R^2 with either midyear or beginning-of-year assets in the denominator is substantially higher than R^2 with end-of-year assets, but those two variants yield virtually indistinguishable results.

A third sensitivity test also indicates that the structure-profit results are generally not as biased as F-M suggest. If accounting depreciation corresponds to economic depreci-

[8]A detailed description of the regression results appears in our working paper (1983).